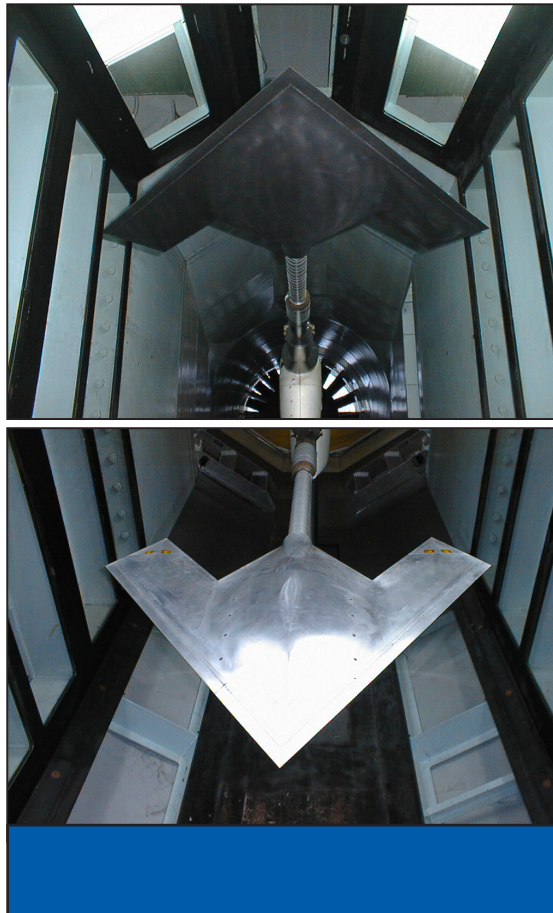


Air Force Research Laboratory | AFRL

Science and Technology for Tomorrow's Aerospace Forces

Success Story

SARL WIND TUNNEL OPERATIONAL



The Air Vehicles Directorate's Aeronautical Sciences Division recently repaired the Philip P. Antonatos Subsonic Aerodynamic Research Laboratory (SARL) wind tunnel in-house for a significant savings. Returning this one-of-its-kind wind tunnel to operational status allows Air Force researchers to perform valuable research and development testing.



Air Force Research Laboratory
Wright-Patterson AFB OH

Accomplishment

The directorate successfully repaired the SARL wind tunnel, permitting airflow through the tunnel under its own power. This is the first time the wind tunnel operated in over two years.

The SARL is the newest of the wind tunnels at Wright-Patterson AFB (WPAFB), Ohio. It allows 360° optical access and facilitates high angle-of-attack simulation that cannot be completed elsewhere. This wind tunnel allows simulations at speeds of Mach 0.15 to Mach 0.6 (approximately 100 to 450 miles per hour) and accommodates models with up to a 3½ ft wingspan.

Background

The Philip P. Antonatos SARL wind tunnel, named for former Aeromechanics Division Chief Philip Antonatos, is the newest of WPAFB's wind tunnels. This wind tunnel began with motor and gearbox shakedown, followed by testing two years later. The SARL is an open circuit subsonic wind tunnel run by a 20,000 horsepower motor. The directorate designed the facility to maximize flow visualization, with 55% of the test sections constructed of optical quality Plexiglas® panels that allow the all-around visibility of the test subject.

In 1998, the SARL wind tunnel suffered a failure of the advanced model support arc bearing system. Directorate engineers used temporary supports to complete the test season. However, testing that required the support system to rotate/pitch or allow high angle-of-attack was impossible without the advanced model support.

Months later, directorate engineers began disassembling and removing the 16-plus ft arc sector, weighing over 2.5 tons. The directorate was unable to use the SARL wind tunnel again until completing the necessary repairs.

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTT, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (01-VA-08)